DOCUMENT RESUME

ED 328 158 HE 024 211

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TITLE The Economic Impact of Liberty University on the Lynchburg Area.
PUB DATE Oct 90
NOTE 46p.
PUB TYPE Reports - Evaluative/Feasibility (142) -- Tests/Evaluation Instruments (160)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Church Related Colleges; *Economic Impact; Employment; Expenditures; Higher Education; Income; Private Colleges; *School Business Relationship; *School Community Relationship; Taxes
IDENTIFIERS *Liberty University VA

ABSTRACT

This study assessed the economic impact of Liberty University (Lynchburg, Virginia) on the local community in the fiscal year 1989-90, and updated a 1980-81 economic impact study. The study used a cash-flow model to measure economic impact on local businesses, local government, and local individuals. Over the 9-year period, total spending by the university and economic impact on the community increased by 300%. Local expenditures by the University, faculty, staff, students, and visitors were estimated to be $42.6 million. The net impact on local government changed from a negative to a positive amount; in 1989-90 local governments allocated $2.6 million to provide services but received taxes and other revenues of $3.0 million. The University employed 1,167 local faculty and staff, and an additional 997 local jobs were created due to University-related local expenditures. Personal income in the area rose by 306%. Appendices contain samples of questionnaires used, survey findings, and descriptions and calculations of the models used. (13 references) (JDD)

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The Economic Impact of Liberty University on the Lynchburg Area

T. H. Lai
School of Business and Government
Liberty University

October 1990

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Preface

The purpose of this study is to assess the economic impact of Liberty University on the local community in the fiscal year 1989-90. The full support from Earl Mills, Provost of Liberty University, and Frank Forbus, Dean of the School of Business and Government, and the cooperation of faculty, staff, and students enabled the completion of this study. Thanks to Professor Harry Caltagirone who read the draft of this paper and provided very helpful suggestions. I also thank members of the staff of the School of Business and Government, especially Donita Carson and Janet Andrews, for their assistance in distributing the questionnaires. The help from local and state governments in supplying the data is greatly appreciated.

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I. Introduction

Founded in 1971 by Dr. Jerry Falwell, Liberty University is a religiously oriented, comprehensive, and coeducational institution of higher education. The University has grown to a 5,300-acre campus with total enrollment of nearly 5,100 students on campus and 11,600 students in the external format of adult education in 1989. Currently, the University is the largest private university in the state of Virginia. The University is located in the heart of Virginia in Lynchburg on the south banks of the historic James River with the scenic Blue Ridge Mountains as a backdrop.[1]

Lynchburg is one of the state's main manufacturing centers, with a population of 69,900 in 1988. While the manufacturing sector in Lynchburg has decreased in size during the past decade, one important source of growth has been higher education, especially the expansion of Liberty University in the past years. The University was the third-largest employer in Central Virginia in 1989.[2]

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[1] Liberty University President's Report and Liberty University Catalog, 1989-90.

[2] See David Argue and George Barnes, "An Economic Profile of the Central Virginia Planning District," Center for Public Service, University of Virginia, May, 1990. The Central Virginia Planning District includes the city of Lynchburg, the city of Bedford, and the four counties surrounding Lynchburg--Amherst, Appomattox, Bedford, and Campbell.

To assess the economic influences of the University on the local community, the first economic impact study of the University was completed in 1982.[3] Since then, the University has continued its significant growth in buildings, faculty members, and student enrollment. The purpose of this study is to update the information that would reflect the economic impact of the University on the local community in the fiscal year 1989-90.[4] Based on the location of the University and the residence of faculty, staff, and students, the geographic area of this study includes the city of Lynchburg, and Amherst, Bedford, and Campbell counties, named "the Lynchburg area" or "the local area."[5]

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[3] See Leonard Moisan, "An Economic Impact Study of Liberty Baptist College on the Lynchburg Metropolitan Area," Liberty Baptist College (former name of Liberty University), April, 1982.

[4] The fiscal year 1989-90 is from July 1, 1989 to June 30, 1990.

[5] That is Bedford county was added to the Lynchburg metropolitan statistical area (MSA), which includes the city of Lynchburg, and Amherst and Campbell counties, in the study.

II. The Methodology and Data

A. The Methodology

Basically, there are two approaches to examine the economic impact of a university on the local community. One is the cash-flow model, which analyzes the economic impact of a university on the local businesses, governments, and individuals within a fiscal year: the local business volume attributable to university-related expenditures; local governments' operating costs and revenues due to the presence of the university; and additional income and employment to local individuals because of the influences of the university.[6] The other is the regression model, which uses data over a period of time, say ten years, to estimate coefficients which show the quantitative relation between the university-related expenditures and the local income and employment.[7] Since there were not sufficient data for the regression analysis, the cash-flow model was adopted in this study. The structure of the model is shown in exhibit 1.

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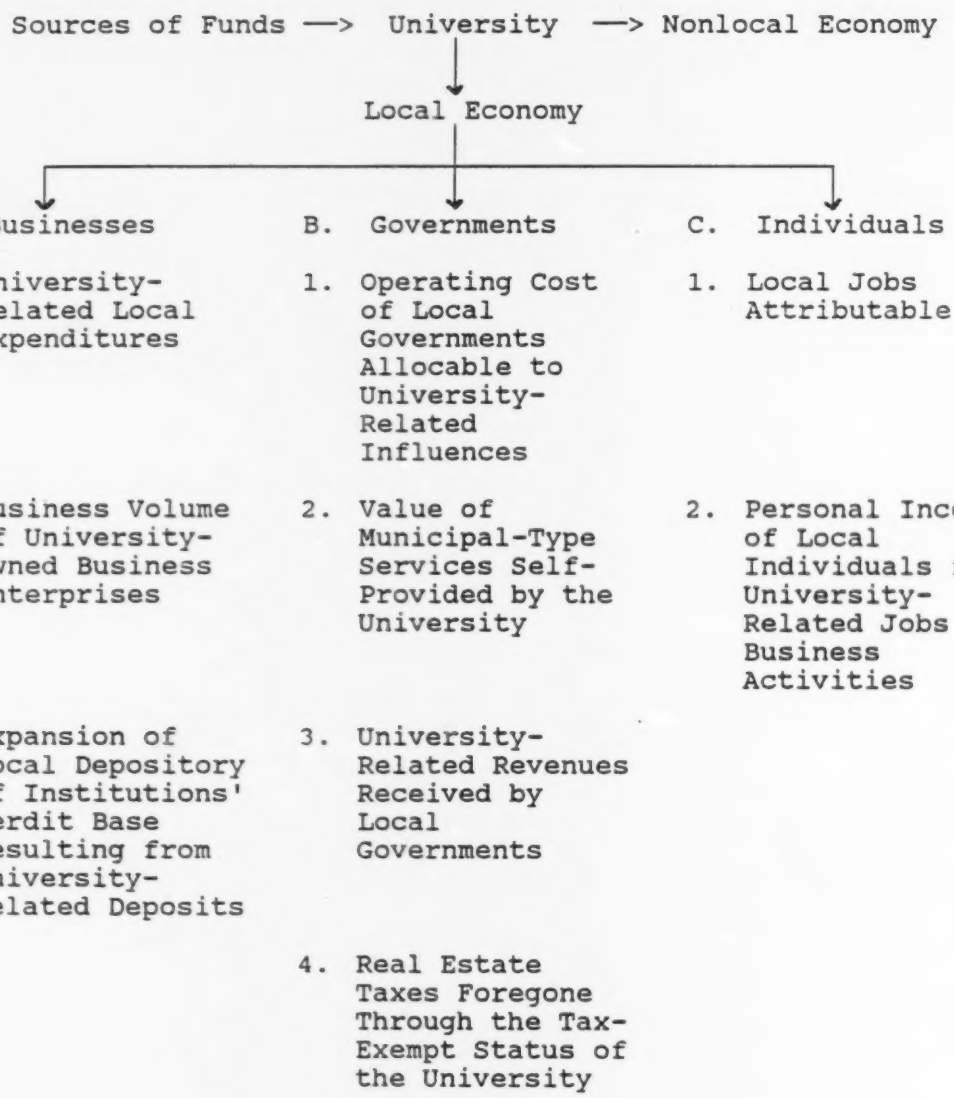
[6] See John Caffrey and Herbert Isaacs, "Estimating the Impact of a College or University on the Local Economy," American Council on Education, 1971; and Ellen Posey, "Georgia State University Spending Patterns and the Atlanta Economy," August, 1983.

[7] See Sheldon Engler, "The Economic Impact of the Louisiana State University System on the Louisiana State Economy," April, 1980.

Exhibit 1: The Cash-flow Model of the Economic Impact Study


Sources of Funds —> University —> Nonlocal Economy
Local Economy
A. Businesses
1. University-Related Local Expenditures
2. Business Volume of University-Owned Business Enterprises
3. Expansion of Local Depository of Institutions' Cerdit Base Resulting from University-Related Deposits
B. Governments
1. Operating Cost of Local Governments Allocable to University-Related Influences
2. Value of Municipal-Type Services Self-Provided by the University
3. University-Related Revenues Received by Local Governments
4. Real Estate Taxes Foregone Through the Tax-Exempt Status of the University
C. Individuals
1. Local Jobs Attributable
2. Personal Income of Local Individuals from University-Related Jobs and Business Activities

B. The Data

For this study, the primary data were obtained from a campus survey. The questionnaires were distributed to faculty, staff and students in April 1990. The questionnaires with cover letter for faculty and staff were sent out to various departments of the University. A total of 360, which is 30% of the 1183 full-time and part-time University employees, were returned through the campus mail. The survey of students, based upon stratified random sampling, was conducted in classes by instructors.[8] The total sample size of students is 634, which is 13% of the 5,013 undergraduate and graduate students.[9] The data from the survey were coded and analyzed using the Lotus 1-2-3 program. The results of the survey are shown in Appendix A. The secondary data were collected from the University, local businesses, and local and state governments.

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[8] Of the total student studied, 40% were freshmen, 19.4% were sophomore, 15.3% were junior, 18.9% were senior, and 6.4% were graduate students.

[9] The optimal sample size of the student body was estimated to be 400, which was based on the data presented in Michael Dennis and Nabih Mikhail's paper "A WLBU-radio Audience Research and Liberty University Student Body Economic Impact Study," Liberty University, Fall, 1988.

III. Economic Impact of the University

Caffrey-Isaacs's cash-flow models were employed to assess the economic impact of Liberty University on the Lynchburg area for the year 1989-90.[10] The three basic models are the local business model, the local government model, and the local individual model. The impacts of the University on local businesses, governments, and individuals are discussed in the following. Descriptions and calculations of the models with data sources are included in Appendix B.

A. The Impact on Local Businesses:

There are direct and indirect impacts of the University on local businesses. The direct impact comes from the local expenditures by the University, faculty, staff, students, and visitors from outside the local area. These expenditures become the receipts of local businesses and individuals. In turn, local businesses and individuals will use these receipts to purchase part of their goods and services from local businesses, which constitutes the indirect impact. The indirect impact will take several rounds before its total effect diminishes.(multiplier effect) Since there were no sufficient data available for estimating the indirect impact, only the direct impact was

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[10] John Caffrey and Herbert Isaacs, "Estimating the Impact of a College or University on the Local Economy," American Council on Education, 1971.

considered in the study. Therefore, the impact of the University on local businesses would be **under**estimated.

In the fiscal year 1989-90, the University spent $6.7 million to purchase goods and services from local businesses, and $20.6 million as payroll to faculty, staff, and student employees. The local spending of faculty and staff was estimated to be $13.2 million with $5.0 million, or 38% of this amount for housing expenditures and $8.2 million, or 62% for nonhousing expenditures. For each local faculty and staff household, the average monthly housing expenditures were $472 and nonhousing expenditures, $771. Students spent $17.9 million for goods and services in the local area with $3.2 million, or 17.9% of this amount for housing expenditures and $14.7 million, or 82.1% for nonhousing expenditures. For an individual student, the average monthly local housing expenditures were $267 and nonhousing expenditures, $245.

In addition to the above spending, visitors to the University, faculty, staff, and students spent about $4.9 million in the local area. In total, the local business volume attributable to the presence of the University was over $42.6 million for the year 1989-90 (model B1).[11] (See Exhibit 2.)

The University has its own business enterprises on campus for its faculty, staff, and students, such as the bookstore, health center, laundry, etc. In 1989-90, the total income from

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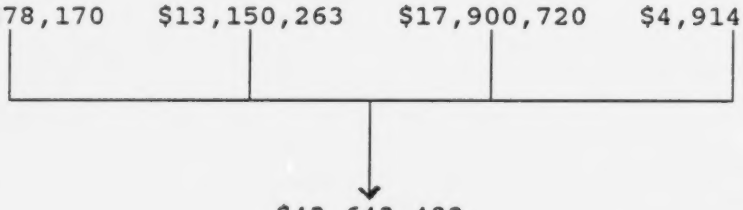
[11] Of this total local business volume, $34.5 million was nonhousing expenditures, which was about 3.3% of total local taxable retail sales.

this operation was $7.4 million (model B2). This should not be viewed as the foregone business volume of local businesses, because without the presence of the University, this business would not exist.

Under the regulation of the Federal Reserves, depository institutions (commercial banks, savings and loan associations, savings banks, and credit unions) have to keep a certain percent of deposits as required reserves, and the remaining amount of deposits, which are the excess reserves, could be used for making loans or other financial investments. It was estimated, because of the University-related deposits, local depository institutions had increased their excess reserves, or say credit base, by $8.1 million in 1989-90 (model B3).

Exhibit 2: Impact of the University on Local Businesses and Individuals

	Liberty University	Faculty and Staff	Students	Visitors
Local Spending	$6,678,170	$13,150,263	$17,900,720	$4,914,328



Total Spending	$42,643,482

	Faculty and Staff	Local Individuals	Total Impact
Local Employ-ment	1,167	997	2,164
Personal Income	$19,460,578	$25,586,090	$45,046,668

B. The Impact on Local Governments:

There are costs and revenues to the local governments because of the presence of the University. The costs are due to the provision of municipal services to the University community, while the revenues are generated from the University-related business and its employees.

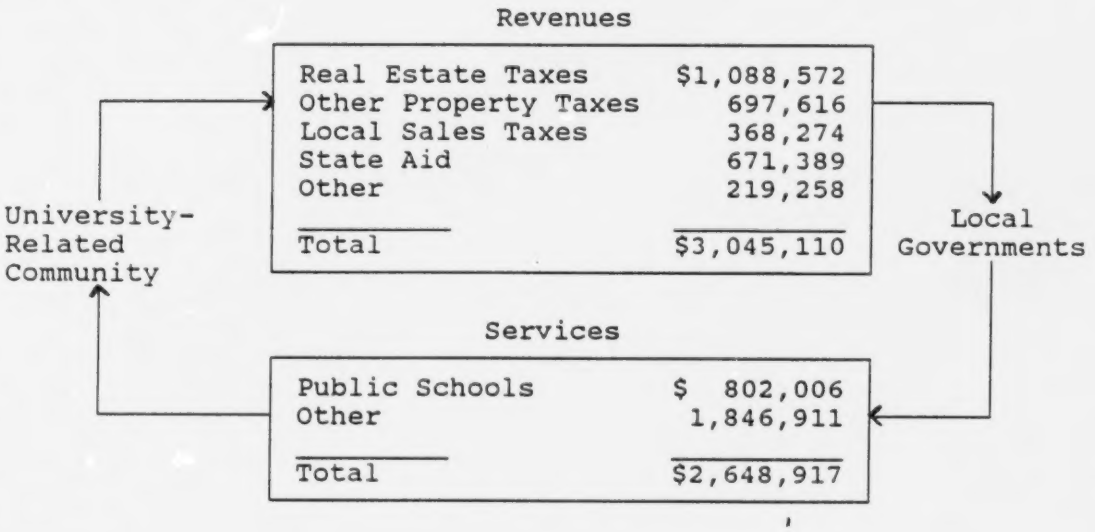
The children of faculty, staff, and students are educated either in local public schools, in private schools or at home. One hundred and seven, or 41.5% of these school-age children of 258 were attending local public schools. It was estimated that the local governments allocated $802,006 operating cost for these children. An additional $1.8 million was spent on other municipal services for the University community, for a total of over $2.6 million (model G1). The University also had its own municipal-type services, such as street lighting and maintenance, police and security, etc., and it cost the University $383,300 for providing these services in the year 1989-90. (model G2).

Revenues to the local governments attributable to the University-related business and its employees were estimated to be over $3.0 million (model G3). These included real estate taxes of $1.1 million paid by faculty, staff, students, and businesses for real estate allocable to University-related business. These groups also paid other property taxes of $697,616 to the local governments. Sales taxes received by the local governments due to the University-related business were $368,274. Also, there was state aid to the local governments attributable

to the presence of the University with the amount of $671,389. Other University-related revenues (auto registration fees, utility taxes) collected by the local governments were estimated to be $219,258. (See Exhibit 3.) Because of the tax-exempt status of the University, real estate taxes of $294,667 were foregone by the Lynchburg city government (model G4).

The information in this section should **not** be taken as a complete analysis of the economic relation between the University and the local governments, since there are factors that are beyond exact quantitative analysis.

Exhibit 3: Impact of the University on Local Governments



C. The Impact on Local Individuals:

The stimulation of the local economy by the University resulted in additional jobs and income to local individuals. Liberty University, the third-largest employer in the local area, employed 1,167 full-time and part-time local faculty and staff in the year 1989-90. There were additional 997 jobs created for local workers because of the University-related influences. In stotal, the University-related employment was 2,164 in the local area (model I1).

The University paid $19.5 million to locally resident faculty and staff, and as the result of the University-related expenditures, an estimated $25.6 million became additional personal income to local individuals. This means that the University helped to generate personal income of $45.1 million in the Lynchburg area in 1989-90 (model I2).

IV. Conclusion

The economic impact of Liberty University on the Lynchburg area can be summarized as follows for the year 1989-90:

1. The local expenditures by the University, faculty, staff, students, and visitors from outside the local area were estimated to be $42.6 million. However, This is **not** the total impact of the University on local businesses, because the indirect impact was not included in the study. (See p. 6)
2. Due to the University-related deposits, the local depository institutions' credit base was expanded by $8.1 million.
3. The local governments allocated over $2.6 million to provide municipal and public school services to the University community.
4. The local governments received taxes and other revenues of over $3.0 million due to the existence of the University.
5. The University employed 1,167 local faculty and staff, and an additional 997 local jobs were created due to the University-related local expenditures.
6. Of the 20.6 million gross compensation paid by the University, $19.5 million went to local faculty and staff. An additional $25.6 million became local personal income as the result of the University-related local expenditures. In

total, personal income of $45.1 million was generated from University-related jobs and business activities.

All the university activities are affected mainly by the number of enrolled students. Land, buildings, faculty, and staff are needed to serve the students. It was predicted that the University could recruit and enroll students over the next two years with a 7% and 6% growth rate, and 5% over the following four years.[12] Also, a new cafeteria, a 112,000 square foot sports arena, and ramps are currently under construction. A building for the School of Business and Government is in the planning stage. With the expected growth in the student enrollment and new facilities in the near future, the economic impact of the University on the Lynchburg area would be continuously significant.

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[12] See"Enrollment Analysis," University Institutional Research and Statistics, Liberty University, 1990.

Appendix A

Samples of Questionnaires and Survey Findings

Exhibit 4: The Cover Letter of the Questionnaire to Faculty/Staff

School of Business and Government

MEMORANDUM

To: Faculty and Staff

From: T. H. Lai

Date: April 20, 1990

Re: Economic Impact Study

==========

At the Provost's direction, the School of Business and Government is assessing Liberty University's economic impact on the Lynchburg area. The study would show the contribution of Liberty University to the Lynchburg community in terms of created income and jobs.

Please take about ten minutes to complete the enclosed questionnaire. The information from each one of you is very vital for this study. Procedures have been adopted which will insure that personal anonymity is maintained.

Please return the questionnaire to me through the campus mail by May 20. Thank you so much for your cooperation.

Exhibit 5: Faculty/Staff Questionnaire

LIBERTY UNIVERSITY ECONOMIC IMPACT STUDY CONFIDENTIAL

Faculty and Staff Questionnaire

1. What is your employment status with the University?

   A. _____ Faculty

   _____ Staff

   _____ Other (please specify: _____)

   B. _____ Full time _____ Part time

2. How many people in your household are employed by the University?

   _____ Total number of full time

   _____ Total number of part time

3. Where is your residence?

   _____ Lynchburg City _____ Amherst County

   _____ Bedford County _____ Campbell County

   _____ Other (please specify: _____)

4. If you reside in the Lynchburg area (Lynchburg City, Amherst, Bedford, or Campbell County), How many people are there in your household? (Including yourself)

   _____ Total number

   _____ Number of children of school age (5-18 years old)

   _____ Number of these attending public schools

   _____ Number of these attending private or home schools

5. In what type of housing do you reside?

   _____ Rented apartment or house

   _____ Own house

   _____ Other (please specify: _____)

6. Please estimate your average monthly expenditures in the Lynchburg area for the following items acquired **off** campus.

$_____ Housing (rent or mortgage, insurance, taxes, and Utilities)

$_____ Food

$_____ Automobiles (payment, gas, insurance, and repairs)

$_____ Other (clothing, health care, eating out, entertainment, schooling, etc.)

7. What is your average monthly balance in banks, savings and loan associations, and credit unions in the Lynchburg area?

$_____ Checking accounts

$_____ Savings deposits

$_____ Money market deposit accounts

$_____ Time deposits

8. How many people from outside the Lynchburg area visited you last year? (Each visit should be counted separately for those people who visited more than once)

_____ Number of visitors

_____ Average days of stay of each visitor

$_____ Estimated average daily expenditures in the Lynchburg area by each visitor

Exhibit 6: Profile of Respondents to Faculty/Staff Survey

Average Monthly Local Expenditures by Each Faculty/Staff, 1989-90.

Residence	Type of Housing	Number of Respondents	Housing Expenditures	Nonhousing Expenditures
Amherst	Rented	9	$376	$ 678
	Owned	2	495	1,078
Bedford	Rented	4	434	1,075
	Owned	31	759	1,014
Campbell	Rented	50	338	481
	Owned	77	516	904
Lynchburg	Rented	73	371	594
	Owned	93	583	869
	Campus	16	NA	502
Nonlocal	Owned	5	575	731

Household Structure of Faculty and Staff, 1989-90

Residence	Number of Respondents	Number of Persons	Number of Children in Public Schools	Number of Children in Private or Home Schools
Amherst	11 (3.1%)	31	2	5
Bedford	35 (9.7%)	111	10	16
Campbell	127 (35.3%)	389	17	54
Lynchburg	182 (50.6%)	558	63	55
Nonlocal	5 (1.4%)	12	4	0
Total	360 (100%)	1101	96	130

Exhibit 7: Student Questionnaire

LIBERTY UNIVERSITY ECONOMIC IMPACT STUDY CONFIDENTIAL

Student Questionnaire

1. What is your student status at the University?

   A. _____ Freshman _____ Sophomore _____ Junior

   _____ Senior _____ Graduate

   _____ Other (please specify: _____)

   B. _____ Full time _____ Part time

2. If you reside in the Lynchburg area (Lynchburg City, Amherst, Bedford, or Campbell County) How many people are there in your household? (Including yourself, but not parents' family or roommates)

   _____ Total number

   _____ Number of children of school age (5-18 years old)

   _____ Number of these attending public schools

   _____ Number of these attending private or home schools

3. Where is your residence while attending the University?

   _____ Lynchburg City _____ Amherst County

   _____ Bedford County _____ Campbell County

   _____ Other (please specify: _____)

4. In what type of housing do you reside?

   A. _____ Rented apartment or house

   _____ Own house

   _____ Other (please specify: _____)

   B. _____ University dorm _____ With parents

** If your answer is under A, please complete C;
*** If your answer is under B, please complete D.

** C. Please estimate your average monthly expenditures in the Lynchburg area for the following items acquired **off** campus.

$_____ Housing (rent or mortgage, insurance, taxes, and utilities)

$_____ Food

$_____ Automobiles (payment, gas, insurance, and repairs)

$_____ Other (books, clothing, health care, eating out, entertainment, laundry, hair care, etc.)

*** D. Please estimate your average monthly expenditures, exclusive of room and board, in the Lynchburg area for the following items acquired **off** campus.

$_____ Automobiles (payment, gas, insurance, and repairs)

$_____ Other (books, clothing, health care, eating out, entertainment, laundry, hair care, etc.)

5. What is your average monthly balance in banks, savings and loan associations, and credit unions in the Lynchburg area?

$_____ Checking accounts

$_____ Savings deposits

$_____ Money market deposit accounts

$_____ Time deposits

6. How many people from outside the Lynchburg area visited you last year? (Each visit should be counted separately for those people who visited more than once)

_____ Number of visitors

_____ Average days of stay of each visitor

$_____ Estimated average daily expenditures in the Lynchburg area by each visitor

7. If you own a car, and it is registered in Virginia, in which city or county is it registered? _____

Exhibit 8: Profile of Respondents to Student Survey

Average Monthly Local Expenditures by Each Student, 1989-90.

Residence	Type of Housing	Number of Respondents	Housing Expenditures	Nonhousing Expenditures
Amherst	Rented	4	$284	$358
	w/Parents	2	NA	280
Bedford	Rented	4	290	479
	Owned	4	444	515
Campbell	Rented	33	277	390
	Owned	9	349	434
	w/Parents	8	NA	269
Lynchburg	Rented	65	223	305
	Owned	6	410	440
	w/Parents	25	NA	187
	Campus	468	NA	217
Nonlocal	Rented	2	205	320
	Owned	3	200	225
	w/Parents	1	NA	260

Household Structure of Students, 1989-90

Residence	Number of Respondents	Number of Persons	Number of Children in Public Schools	Number of Children in Private or Home Schools
Amherst	6 (1.0%)	9	0	0
Bedford	8 (1.3%)	21	1	3
Campbell	50 (7.9%)	95	2	2
Lynchburg	96 (15.1%)	168	12	12
Campus	468 (73.8%)	468	0	0
Nonlocal	6 (1.0%)	13	0	0
Total	634 (100%)	774	15	17

Appendix B

Descriptions and Calculations of the Models

A. Local Business Models

The local business models and submodels estimate the value of; University-related local expenditures (model B1); business volume operated by University-owned business enterprises (model B2); and expansion of local depository institutions' credit base resulting from University-related deposits (model B3)

Model	Source

B1
University-Related Local Expenditures
= B1.1 + B1.2 + B1.3 + B1.4
= $42,643,482

B1.1
Local Expenditures by the University
= el * (U - W)
= $6,678,170

el,	Proportion of university expenditures that are paid to local businesses = 12%	University Accounting Office
U,	University expenditures = $76,258,210	University Accounting Office
W,	Gross compensation to faculty, staff, and students = $20,606,791	University Accounting Office

B1.2
Local Expenditures by Faculty and Staff
= B1.2a + B1.2b
= $13,150,263

B1.2a
Housing Expenditures by Local Faculty and Staff
= (F * fr * Rf) + (F * fh * Hf)
= $4,991,078

F,	Number of faculty and staff = 1,183	University Institutional Research and Statistics

fr,	Proportion of faculty and staff renting local housing = 36.8%	Faculty/staff survey
Rf,	Average rental housing expenditures by each faculty and staff = $3,343.2	Faculty/staff survey
fh,	Proportion of faculty and staff owning local housing = 57.4 %	Faculty/staff survey
Hf,	Average housing expenditures by each faculty and staff = $5,206.8	Faculty/staff survey

B1.2b
Local Nonhousing Expenditures
by Faculty and Staff
= (F * fl * NHf) +
  (F * (1 - fl) * NHnf)
= $8,159,185

F,	Number of faculty and staff = 1,183	University Institutional Research and Statistics
fl,	Proportion of faculty and staff residing locally = fr + fh + fu = 98.6%	Faculty/staff survey
fu,	Proportion of faculty and staff living in university-provided housing = 4.4%	Faculty/staff survey
NHf,	Average nonhousing expenditures by each local faculty and staff = $6,906	Faculty/staff survey
NHnf,	Average local nonhousing expenditures by each non-local faculty and staff = $6,265.2	Faculty/staff survey

B1.3
Local Expenditures by Students
= B1.3a + B1.3b
= $17,900,720

B1.3a
Housing Expenditures by Local Students
= (S * sr * Rs) + (S * sh * Hs)
= $3,159,670

S,	Number of students = 5,013	University Institutional Research and Statistics
sr,	Proportion of students renting local housing = 16.7%	Student survey
Rs,	Average rental housing expenditures = $2,937.6	Student survey
sh,	Proportion of students owning local housing = 3.0%	Student survey
Hs,	Average housing expenditures = $4,657.2	Student survey

B1.3b
Local Nonhousing expenditures by Students
= (S * sl * NHs) + Md
(S * (1 - sl) * NHns)
= $14,741,051

S,	Number of students = 5,013	University Institutional Research and Statistics
sl,	Proportion of students residing locally = sr + sh + sd = 99.2%	Student survey
sd,	Proportion of students obtaining local room and board from dormitory or parents = 79.5%	Office of Residence Life, and Student survey
NHs,	Average local nonhousing expenditures per local student = $2,043.6	Student survey

Md,	Food expenditures on campus by students[13] = $4,452,114	University Accounting Office
NHns,	Average local nonhousing expenditures per non-local student = $3,150	Student survey

B1.4
Local Expenditures by Visitors
= V1 * E1 + V2 * E2 + V3 * E3
= $4,914,328

V1,	Number of visitors to the university = 6,545	University Visitor Center and Records Office
E1,	Average daily expenditures per visitor to the university = $40	Estimate
V2,	Number of visitors to faculty and staff = 30,895	Faculty/staff survey
E2,	Average daily expenditures per visitor to faculty and staff = $38.2	Faculty/staff survey
V3,	Number of visitors to students = 72,190	Student survey
E3,	Average daily expenditures per visitor to students = $48.1	Student survey

B2
Business Volume Operated by University-Owned Business Enterprises
= $7,359,669 — University Accounting Office

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[13] The food service on campus was provided by a private company, not by the University.

B3
Expansion of the Local Depository Institutions' Credit Base Resulting from University-Related Deposits[14]

= (1-c) (Cu + Cf + Cs + cbv * B1) + (Tf + Ts)
= $8,086,875

c,	Checking accounts reserve requirements = 3%	Federal Reserve Bulletin
Cu,	Checking accounts of the university = $1,068,293	University Accounting Office
Cf,	Checking accounts of faculty and staff = $794,462	Faculty/staff survey
Cs,	Checking accounts of students = $723,358	Student survey
cbv,	Cash-to-business-volume ratio = 0.037	Caffrey-Isaacs
B1,	University-related local expenditures = $42,643,482	Model B1
Tf,	Saving and time deposits, and money market deposit accounts of faculty and staff = $2,962,660	Faculty/staff survey
Ts,	Saving and time deposits, and money market deposit accounts of students = $1,085,211	Student survey

[14] There are no reserve requirements on saving deposits, time deposits or money market deposit accounts.

B. Local Government Models

The local government models and submodels estimate the value of: operating cost of local governments allocable to University-related influences (model G1); value of municipal-type services self-provided by the University (model G2); University-related taxes and other revenues received by local governments (model G3); and real estate taxes foregone due to the tax-exempt status of the University (model G4).

Model Source

G1
Operating Cost of Government-Provided Municipal and Public Schools Services Allocable to University-Related Influences
= G1.1 + G1.2
= $2,648,917

G1.1
Operating Cost of Government-Provided Municipal Services Allocable to University-Related Influences
= Σ Bm * ((Pf+Ps)/POP)
= $1,846,911

Bm, Local government's operatingLocal Governments budgets for all municipal services except public schools
Amherst = $4,995,467
Bedford = $11,768,918
Campbell = $7,910,216
Lynchburg = $43,318,253

Pf, Number of persons in facultyFaculty/staff survey and staff households residing locally
Amherst = 77
Bedford = 276
Campbell = 967
Lynchburg = 1387

Ps, Number of persons in student households residing locally[15] — Student survey

Amherst = 71
Bedford = 166
Campbell = 751
Lynchburg = 743

POP, Local population[16] — Local Governments (1988 data)

Amherst = 28,900
Bedford = 41,500
Campbell = 46,900
Lynchburg = 65,614

G1.2

Operating Cost of Local Public Schools Allocable to University-Related Persons

$=\Sigma Bp * (Cfs/CP)$

= $802,006

Bp, Local governments' operating budgets for public schools — Local School Boards

Amherst = $4,980,911
Bedford = $9,401,453
Campbell = $8,734,221
Lynchburg = $25,088,090

Cfs, Number of faculty, staff, and students' children attending local public schools — Faculty/staff survey and Student survey

Amherst = 5
Bedford = 33
Campbell = 58
Lynchburg = 252

CP, Number of children attending local public schools — Local School Boards

Amherst = 4,496
Bedford = 8,000
Campbell = 8,010
Lynchburg = 9,104

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[15] For the city of Lynchburg, the number of persons in student households does not include the University's campus students.

[16] For the city of Lynchburg, the local population does not include the University's campus students.

G2
Value of Municipal-Type Services Self-Provided by the University
= $383,300

University Accounting Office

G3
University-Related Revenues Received by Local Governments
= G3.1 + G3.2 + G3.3 + G3.4 + G3.5
= $3,045,110

G3.1
University-Related Real Estate Taxes Paid to Local Governments
= G3.1a+ G3.1b
= $1,088,572

G3.1a
Real Estate Taxes Paid by Faculty, Staff, and Students
=Σ((FSH * VH) + (FSR * AR)) * pt
= $685,152

FSH, Number of houses occupied by faculty, staff, and students — Faculty/staff survey and Student survey
- Amherst = 5
- Bedford = 109
- Campbell = 262
- Lynchburg = 278

VH, Average value of private houses — Lynchburg Board of Realtors
- Amherst = $71,667
- Bedford = $100,214
- Campbell = $78,637
- Lynchburg = $71,634

FSR, Number of rental houses occupied by faculty, staff and students — Faculty/staff survey and Student survey
- Amherst = 54
- Bedford = 42
- Campbell = 148
- Lynchburg = 679

AR,	Average value of rental houses Amherst = $30,080 Bedford = $34,720 Campbell = $27,040 Lynchburg = $29,680	Local Realtors
pt,	Property tax rates Amherst = 0.51% Bedford = 0.62% Campbell = 0.51% Lynchburg = 1.18%	Local Governments

G3.1b
Real Estate Taxes Paid
by Local Businesses for Real
Property Allocable to
University-Related Business
= (NH/B) *Σ(RP * pt)
= $403,420

RP,	Value of local business real property[17] Amherst = $187,873,072 Bedford = $432,627,974 Campbell = $368,741,824 Lynchburg = $572,041,630	Local Governments
pt,	Property tax rates Amherst = 0.51% Bedford = 0.62% Campbell = 0.51% Lynchburg = 1.18%	Local Governments
NH,	University-related local nonhousing expenditures = $34,492,733	Model B1.1, B1.2b, B1.3b and B1.4
B,	Local business volume[18] = $1,049,326,763	Taxable Sales in Virginia Counties and Cities, Dept. of Taxation, Richmond, 1989

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[17] In the city of Lynchburg, the local business real property was 35% of the total local real estate. This percentage was applied to Amherst, Bedford, and Campbell counties. The value of local real estate was inflated from 1988 data. See "Annual Report," Department of Taxation, Richmond, Virginia, 1989.

[18] The local business volume was the total taxable retail sales.

G3.2
University-Related
Property Taxes, Other Than
Real Estate Taxes Paid to
Local Governments
= G3.2a + G3.2b
= $697,616

G3.2a
Tangible Personal Property
Taxes Paid by Faculty,
Staff and Students
= Σ TP * (HFS/HT)
= $296,682

HFS,	Number of faculty, staff, and student households residing locally Amherst = 59 Bedford = 151 Campbell = 411 Lynchburg = 997	Faculty/staff survey and Student survey
HT,	Number of local households Amherst = 11,560 Bedford = 16,600 Campbell = 18,760 Lynchburg = 27,960	Local Governments
TP,	Tangible personal property taxes Amherst = $1,257,949 Bedford = $2,846,526 Campbell = $3,351,826 Lynchburg = $5,354,638	Local Governments

G3.2b
Other Taxes Paid by Local
Businesses as the Result of
University-Related Business
= (NH/B) * (Rm + Rb)
= $400,933

NH,	University-related local nonhousing expenditures = $34,492,773	Model B1.1, B1.2b, B1.3b and B1.4
B,	Local business volume = $ 1,049,326,763	Taxable Sales in Virginia Counties and Cities, Dept. of Taxation, Richmond, 1989

Rm,	Machinery and tool taxes, and public service corporation taxes paid to local governments = $8,602,531	Local Governments
Rb,	Business license fees paid to local governments = $3,594,537	Local Governments

G3.3
Sales Tax Revenue Received by Local Governments as the Result of University-Related Purchases
= (NH/B) * ST
= $368,274

NH,	University-related local nonhousing expenditures = $34,492,733	Model B1.1, B1.2b, B1.3b and B1.4
B,	Local business volume = $1,049,326,763	Taxable Sales in Virginia Counties and Cities, Dept. of Taxation, Richmond, 1989
ST,	Sales tax collected locally = $11,203,504	Local Governments

G3.4
State Aid to Local Governments Allocable to the Presence of the University
= G3.4a + G3.4b
= $671,389

G3.4a
State Aid to Local Public Schools Allocable to Children of University-Related Families
=ΣAp * (Cfs/CP)
= $660,025

Ap,	State aid to local public schools Amherst = $6,270,744 Bedford = $17,135,027 Campbell = $20,341,377 Lynchburg = $15,718,078	Local School Boards and Annual Report of the Superintendent of Public Instruction

Cfs,	Number of faculty, staff, and students' children attending local public schools Amherst = 5 Bedford = 33 Campbell = 58 Lynchburg = 252	Faculty/staff survey and Student survey
CP,	Number of children attending local public schools Amherst = 4,496 Bedford = 8,000 Campbell = 8,010 Lynchburg = 9,104	Local School Boards and Annual Report of the Superintendent of Public Instruction

G3.4b
Other State Aid Received by Local Governments Allocable to the Presence of the University[19]
= Σ ABC * (Pfs/POP)
= $11,365

ABC,	Local share of ABC profits Amherst = $79,227 Bedford = $100,000 Campbell = $110,577 Lynchburg = $180,000	Local Governments
Pfs,	Number of persons in faculty, staff, and student households residing locally Amherst = 148 Bedford = 442 Campbell = 1718 Lynchburg = 2130	Faculty/staff survey and Student survey
POP,	Local population Amherst = 28,900 Bedford = 41,500 Campbell = 46,900 Lynchburg = 65,614	Local Governments (1988 data)

G3.5
Other University-Related Revenues Collected by Local Governments
= Σ Ar * Afs
+ Σ Ut * (HFS/HT)
= $219,258

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[19] See footnotes 15 & 16.

Ar,	Auto registration fee Amherst = $20 Bedford = $10 Campbell = $15 Lynchburg = $25	Department of Motor Vehicles
Afs,	Number of faculty, staff, and students' cars Amherst = 66 Bedford = 161 Campbell = 699 Lynchburg = 1078	University Security Office, Faculty/staff survey, and Student survey
Ut,	Utility taxes Amherst = $341,205 Bedford = $0 Campbell = $0 Lynchburg = $4,968,070	Local Governments
HFS,	Number of faculty, staff, and student households residing locally Amherst = 59 Bedford = 151 Campbell = 411 Lynchburg = 997	Faculty/staff survey and Student survey
HT,	Number of local households Amherst = 11,560 Bedford = 16,600 Campbell = 18,760 Lynchburg = 27,960	Local Governments

G4

Real Estate Taxes Foregone Through the Tax-Exempt Status of the University
= Ru * pt
= $294,667

Ru,	Real property value of the university = $24,971,750	Lynchburg City Assessor
pt,	Property tax rate = 1.18%	Lynchburg City Government

C. Local Individual Models

The local individual models and submodels estimate: the number of local jobs attributable to the presence of the University (model I1); and the personal income of local individuals from University-related jobs and business activities (model I2).

Model	Source	
I1 Number of Local Jobs Attributable to the Presence of the University = F + (B1 + G1) * j = 2,164		
F,	Number of faculty and staff =1,183	University Institutional Research and Statistics
f1,	Proportion of faculty and staff residing locally = 98.6%	Faculty/staff survey
B1,	University-related local expenditures = $42,643,482	Model B1
G1,	Operating cost of government provided municipal and public services allocable to university-related influences = $2,648,917	Model G1

j,	Jobs per dollar of direct expenditures in the local environment[20] = 0.00002	Estimate

I2
Personal Income of Local Individuals from University-Related Jobs and Business Activities
= (fl * Wf) + (p * B1)
= $45,046,668

fl,	Proportion of faculty and staff residing locally = 98.6%	Faculty/staff survey
Wf,	Gross compensation to faculty and staff = $19,736,895	University Accounting Office
p,	Payrolls and profits per dollar of local direct expenditures = 0.60	Caffrey-Isaacs
B1,	University-related local expenditures = $42,643,482	Model B1

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[20] According to the following regression equation, each additional one dollar spent locally would create additional 0.000022 local jobs.
Employment = 21,242 + 0.000022 * Spending
(0.000002) $R^2 = 0.94$
Spending = 0.66 * Personal income
sample period: 1980-88

Sources:
a. The employment variable was the total employment of construction, wholesale trade, retail trade, finance, real estate, and services industries.
b. It was assumed that local individuals spent 66% of their income locally. This was based upon the spending pattern of faculty and staff.
c. Annual data of employment and personal income in the Lynchburg MSA were taken from "An Economic Profile of the Lynchburg Metropolitan Statistical Area."

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EXECUTIVE SUMMARY

The impact of Liberty University on the Lynchburg area has taken a significant jump between the study done in 1980 and the one just completed (1990). Some interesting comparisons can be made.

Total Spending

1980-81	$13,884,368
1989-90	$42,643,482

Economic Impact on Community

1980-81	$24,297,643
1989-90	$76,758,267

These figures are interpretative using the same assumptions for both studies. Both sets of numbers indicate a greater than 300% increase over the nine (9) years studied.

In the 1980-81 study the net impact on local government was a negative $449,253.

In the 1989-90 study the net impact on local government was a positive $396,193.

Rather than being a drain on local government now we are making a positive contribution to community welfare.

Personal income

1980-81	$14,712,214
1989-90	$45,046,668

Increase of $30,334,454 or 306%